

# **Updated 2001 Power & Operations Outlook**

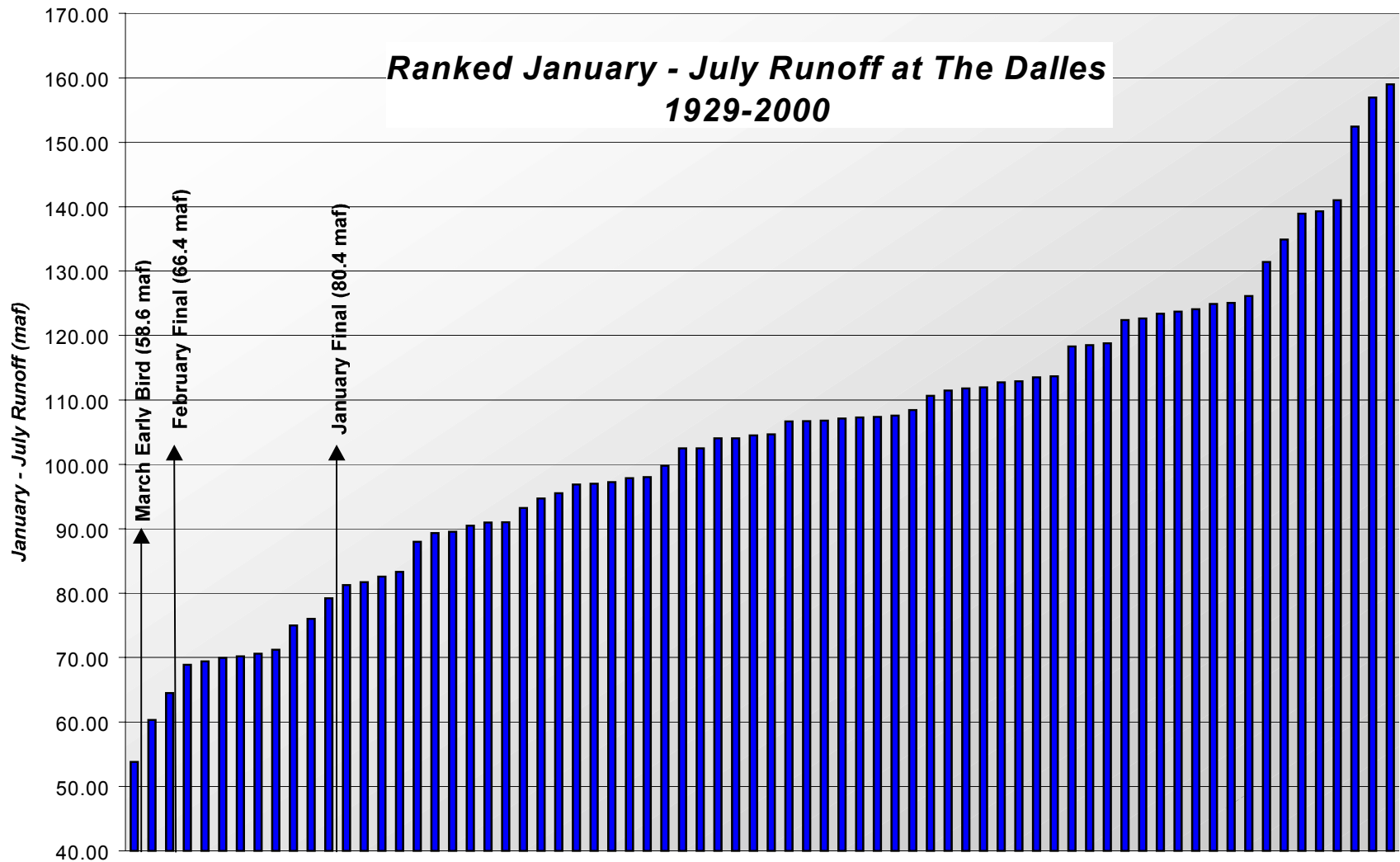
*Bonneville Power Administration*

*March 7, 2001*

# The Water Situation - Updated March 2001

- As of March 1, the weighted Columbia Basin snowpack was 53% of average. The historic low year of 1977 had a slightly lower March 1 overall snowpack.
- The March early bird forecast for the January – July runoff at The Dalles is only 58.6 million acre feet (55% of normal). If this forecast materializes, it will be the second lowest runoff in the 72 year record, beaten only by 1977 (53.8 maf).
- With each successive drop in the water supply forecast,, a key question is: Are we heading for a new record low and if so, how low can the volume go? One way to look at this question is to look at the 72 year record and take the lowest streamflow on record for each month in the January-July period and accumulate the volume for a January – July total. Doing this gives a volume of 51.3 maf, slightly lower than the record of 53.8 maf in 1977.
- Since November the observed streamflows have ranked (using the 72 year record) as follows: November - 10<sup>th</sup> lowest, December - 6<sup>th</sup> lowest, January – 3<sup>rd</sup> lowest, February – 3<sup>rd</sup> lowest.
- BPA uses Ensemble Streamflow Prediction (ESP) methodology from the National Weather Service River Forecast System (NWSRFS) model to forecast future streamflows. This methodology has produced eight future streamflow scenarios which attempt to capture the range of streamflows within the 95% and 5% exceedance probability range for both monthly and January-July volume variability. The following streamflow, operational, and financial information is based on these eight scenarios.

# The Water Situation



# Efforts to Reduce Load

- ◆ BPA sponsored ads in 17 Northwest newspapers informing the public of measures they can take to conserve electricity.
- ◆ For January BPA contracted for a total of 1300 MWs in market purchases and DSI load reductions at a cost of \$200 million.
- ◆ For February, market purchases and DSI load reductions totaled 460 aMW at approximately \$42 million.
- ◆ BPA has developed initial strategies for pursuing voluntary purchases of irrigation pumping loads.
- ◆ BPA assisted the Northwest Governors in their public call for a 10% reduction in energy consumption.
- ◆ BPA accelerated implementation of its \$200 million conservation investment and renewable resources development incentive program from October 2001 to February.



# Summary of Operational Scenarios

## Proposed Contingency Operation:

- April/May- meet Vernita Bar minimum flow
- GCL: Partial June refill to 1283'; end of Aug at 1278'
- DWR: Partial June refill to 1580'; end of Aug at 1520'
- HGH: Run min making sure to end Aug at 3540' (shape any excess water into Aug)
- LIB: Run 4 kcfs Mar through May, and 6 kcfs June through Aug. End of Aug at 2439' (shape any excess water into April II through May)
- Apr 15-June spill: full at BON, 40% at TDA; minimum spill levels at other projects
- July-Aug spill: minimum at all projects

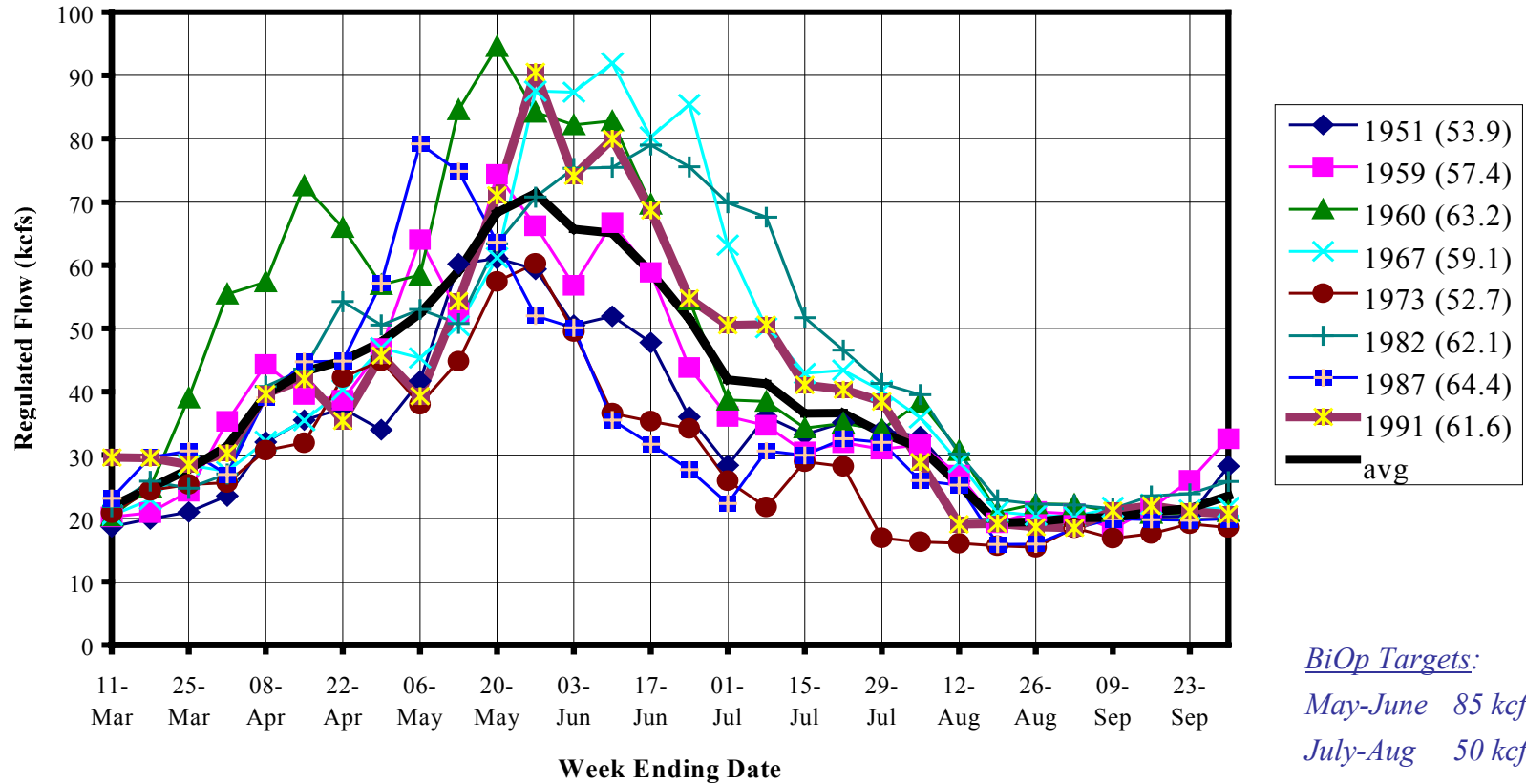
## Meet Load Study:

- FCRPS operated to meet load demands
- Assumed no spill
- Did not operate to meet any flow objectives
- Any additional water beyond what is needed to meet load was stored at upriver projects

*NOTE: CRITFC and ID/MT have also submitted contingency operational proposals that have not been modeled by BPA.*

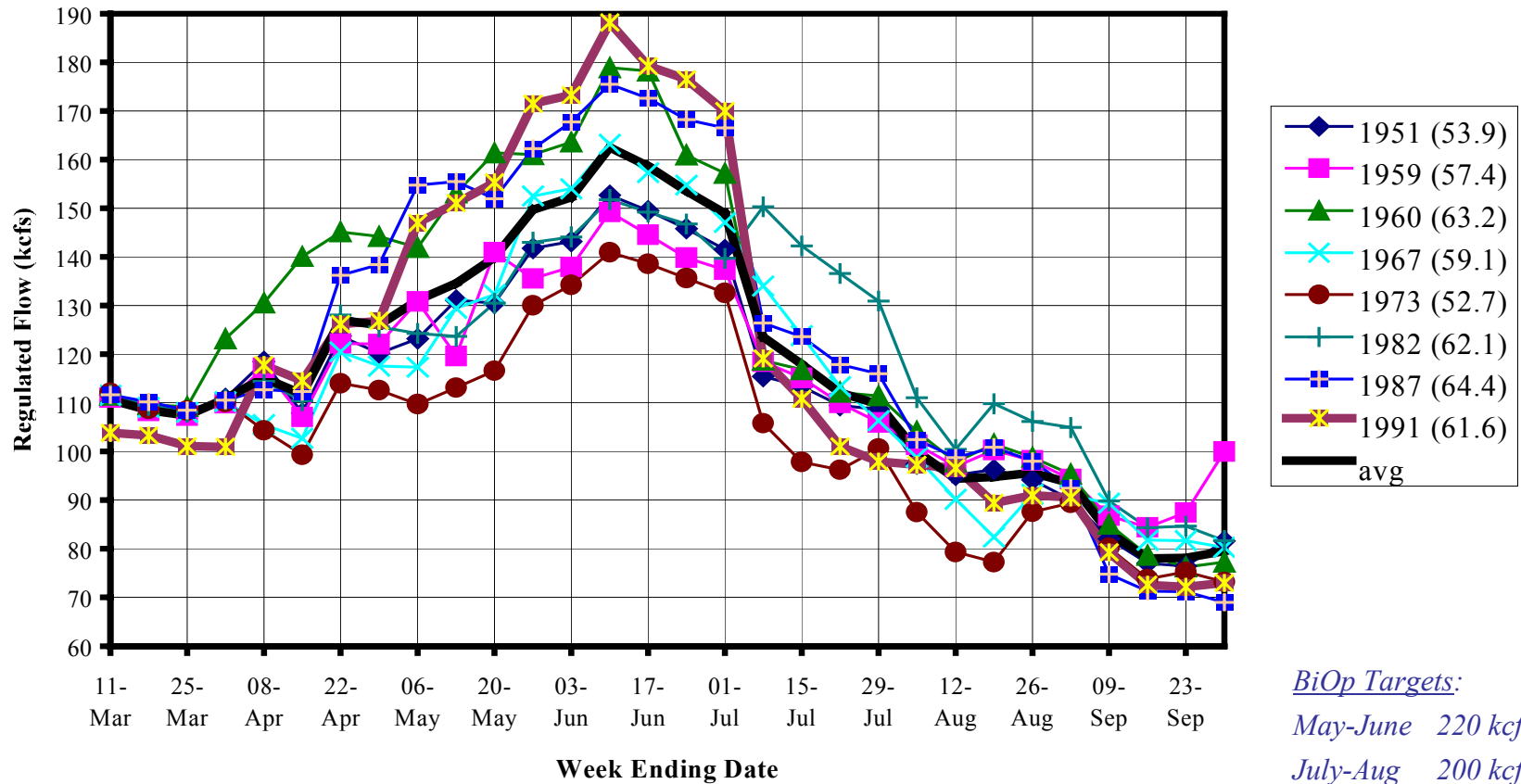
# Lower Granite Flows

Contingency Operation - - mean of scenarios = 59.3 Maf



# McNary Flows

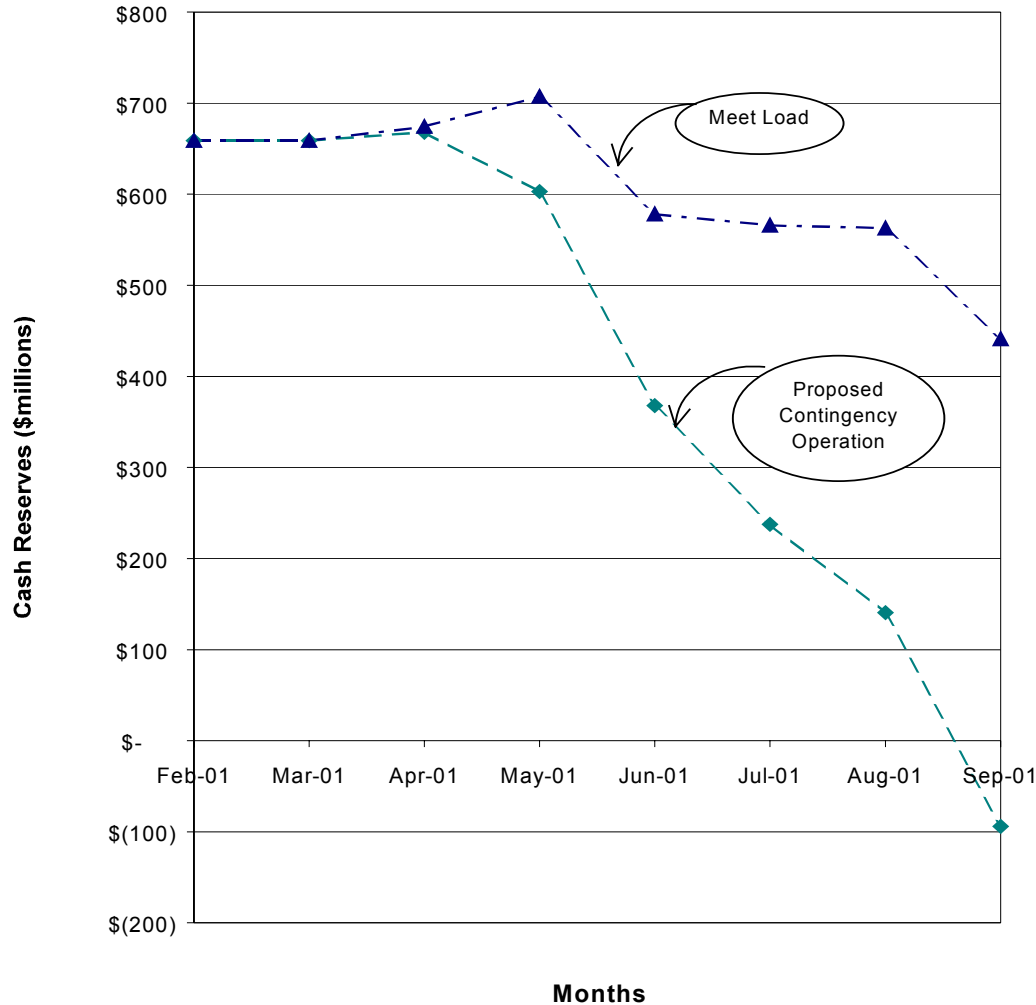
Contingency Operation - - mean of scenarios = 59.3 Maf



# 2001 Financials

## Comparison of Expected Value Reserve Levels - FY2001

59 MAF



### Cash Flow

(Probability of < \$0 Reserves)

	<i>Proposed Contingency</i>	
	<i>Operations</i>	<i>Meet Load</i>
Feb-01	0.0%	0.0%
Mar-01	0.0%	0.0%
Apr-01	0.0%	0.0%
May-01	0.2%	0.0%
Jun-01	7.5%	0.0%
Jul-01	23.5%	0.0%
Aug-01	29.7%	0.0%
Sep-01	45.8%	0.5%

### FY2001 Ending Reserve Levels

(Probability of < \$300M Reserves)

69.3%      16.2%

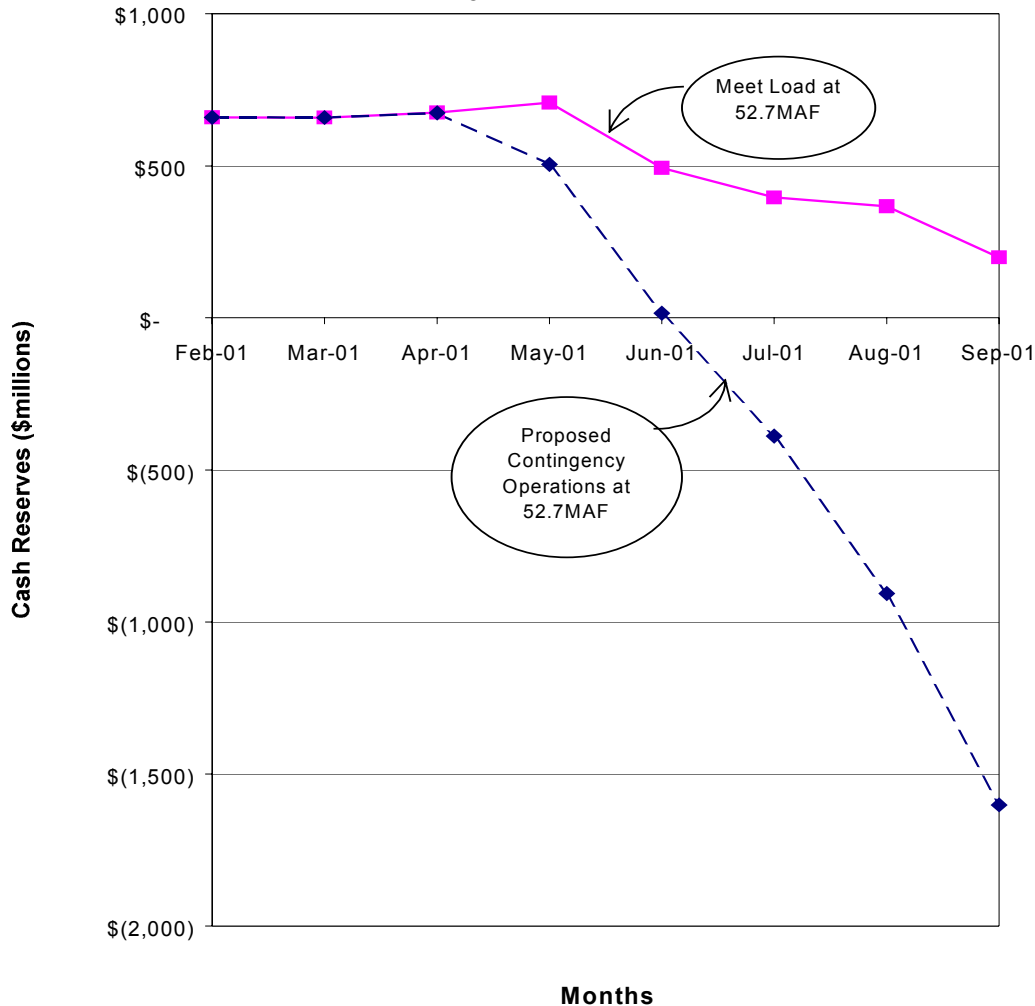
#### Assumptions:

1. Cal ISO/PX don't pay anything due.
2. 4H10c credits applied monthly starting in February.
3. The monthly expected value reserve levels represent the mean of 2100 scenarios which are based on 8 different water years with range from 52.7 to 64.4 MAF runoff.



# 2001 Financials

**Comparison of Expected Value Reserve Levels - FY2001**  
52.7 MAF



## Cash Flow

(Probability of < \$0 Reserves)

	Proposed Contingency Operations at 52.7MAF	Meet Load at 52.7 MAF
Feb-01	0.0%	0.0%
Mar-01	0.0%	0.0%
Apr-01	0.0%	0.0%
May-01	0.8%	0.0%
Jun-01	42.4%	0.0%
Jul-01	92.0%	0.0%
Aug-01	100.0%	0.0%
Sep-01	100.0%	4.2%

## FY2001 Ending Reserve Levels

(Probability of < \$300M Reserves)

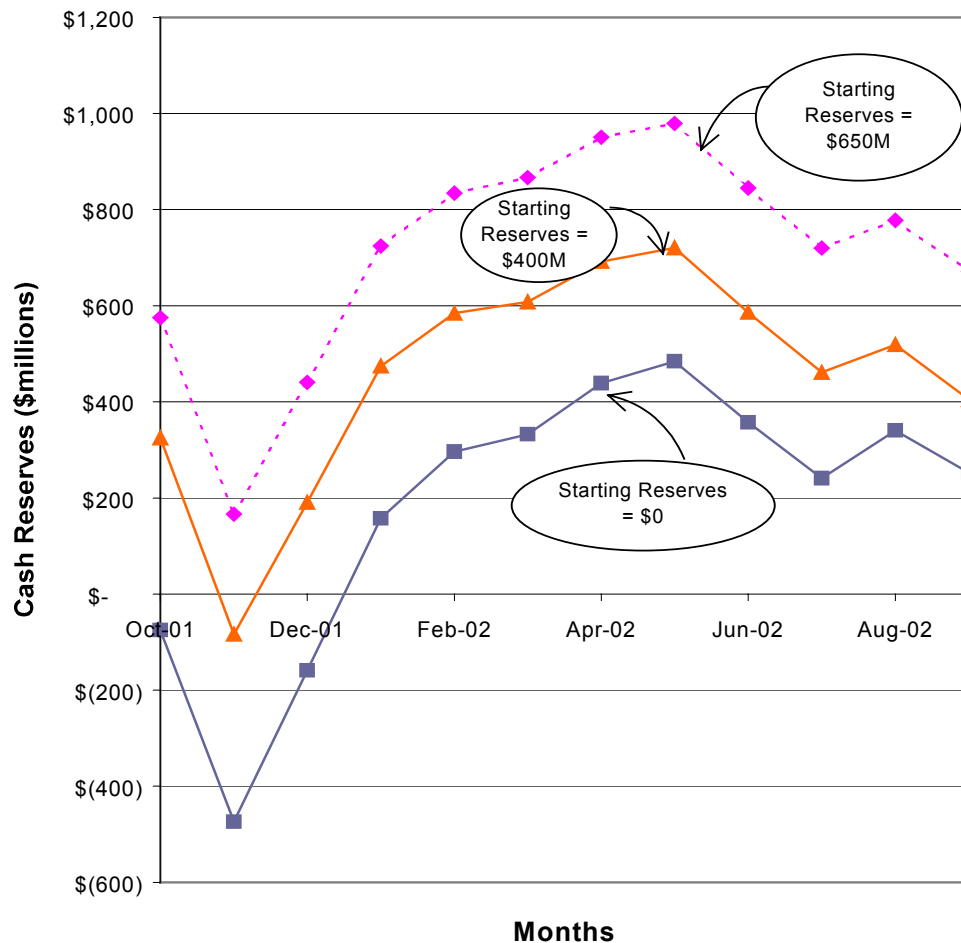
100.0% 4.2%

### Assumptions:

1. Cal ISO/PX don't pay anything due.
2. 4H10c credits applied monthly starting in February.
3. The monthly expected value reserve levels represent the mean of 262 scenarios which are based on one water year at 52.7 MAF.

# 2002 Financials

Comparison of Expected Value Reserve Levels - FY2002



## Cash Flow

(Probability of Reaching \$0 Reserves)

	Starting Reserves - \$0	Starting Reserves - \$400M	Starting Reserves - \$650M
Oct-01	100.0%	0.0%	0.0%
Nov-01	100.0%	46.7%	11.3%
Dec-01	93.7%	7.0%	3.0%
Jan-02	8.3%	2.7%	2.0%
Feb-02	13.3%	8.7%	6.0%
Mar-02	15.3%	12.3%	10.7%
Apr-02	15.0%	13.3%	11.3%
May-02	16.3%	14.7%	12.3%
Jun-02	18.3%	16.7%	13.3%
Jul-02	22.0%	18.0%	15.7%
Aug-02	23.3%	18.7%	13.7%
Sep-02	31.7%	26.7%	17.3%

### Assumptions:

1. Rate increase for illustrative purposes only.
2. 2000 Biological Opinion
3. Augmentation to critical water
4. Assumes reservoirs end at BiOp levels
5. Below average water assumed for fall
6. Full range of water conditions Jan-August '02

# Meet Load Study Summary

- No spring or summer spill was modeled
- Storage reservoirs were operated to store or draft as needed to meet load (with no surplus or deficits)
- This stored water is termed flexible storage in the table below

FLEXIBLE STORAGE (SEP 30)				
Volume	Year	KSFD	MW-Months	MILLIONS OF \$ (Price = \$250/MWh)
53.9	1951	1109	2189	\$399
57.4	1959	1883	3717	\$678
63.2	1960	3556	7018	\$1,281
59.1	1967	1586	3131	\$571
52.7	1973	0	0	\$0
62.1	1982	2483	4900	\$894
64.4	1987	3260	6434	\$1,174
61.6	1991	2513	4960	\$905

# Meet Load Study Summary

## Spill to MW-Months Conversion

<b>BiOp Spill Levels</b>						
<i>MW-Months</i>	April	May	June	July	August	Total
Bonneville	217	336	325	336	336	1,551
The Dalles	183	333	357	274	227	1,375
John Day	173	315	337	259	214	1,298
McNary	85	132	85	0	0	303
Ice Harbor	293	336	325	336	336	1,626
<b>TOTAL</b>	<b>951</b>	<b>1,453</b>	<b>1,430</b>	<b>1,206</b>	<b>1,114</b>	<b>6,154</b>

<b>Proposed Contingency Operation Spill Levels</b>						
<i>MW-Months</i>	April	May	June	July	August	Total
Bonneville	217	336	325	204	204	1,286
The Dalles	183	333	357	206	170	1,249
John Day	72	131	140	108	89	541
McNary	64	99	64	0	0	228
Ice Harbor	181	208	201	208	208	1,006
<b>TOTAL</b>	<b>717</b>	<b>1,108</b>	<b>1,088</b>	<b>725</b>	<b>671</b>	<b>4,310</b>

# Issue Summary

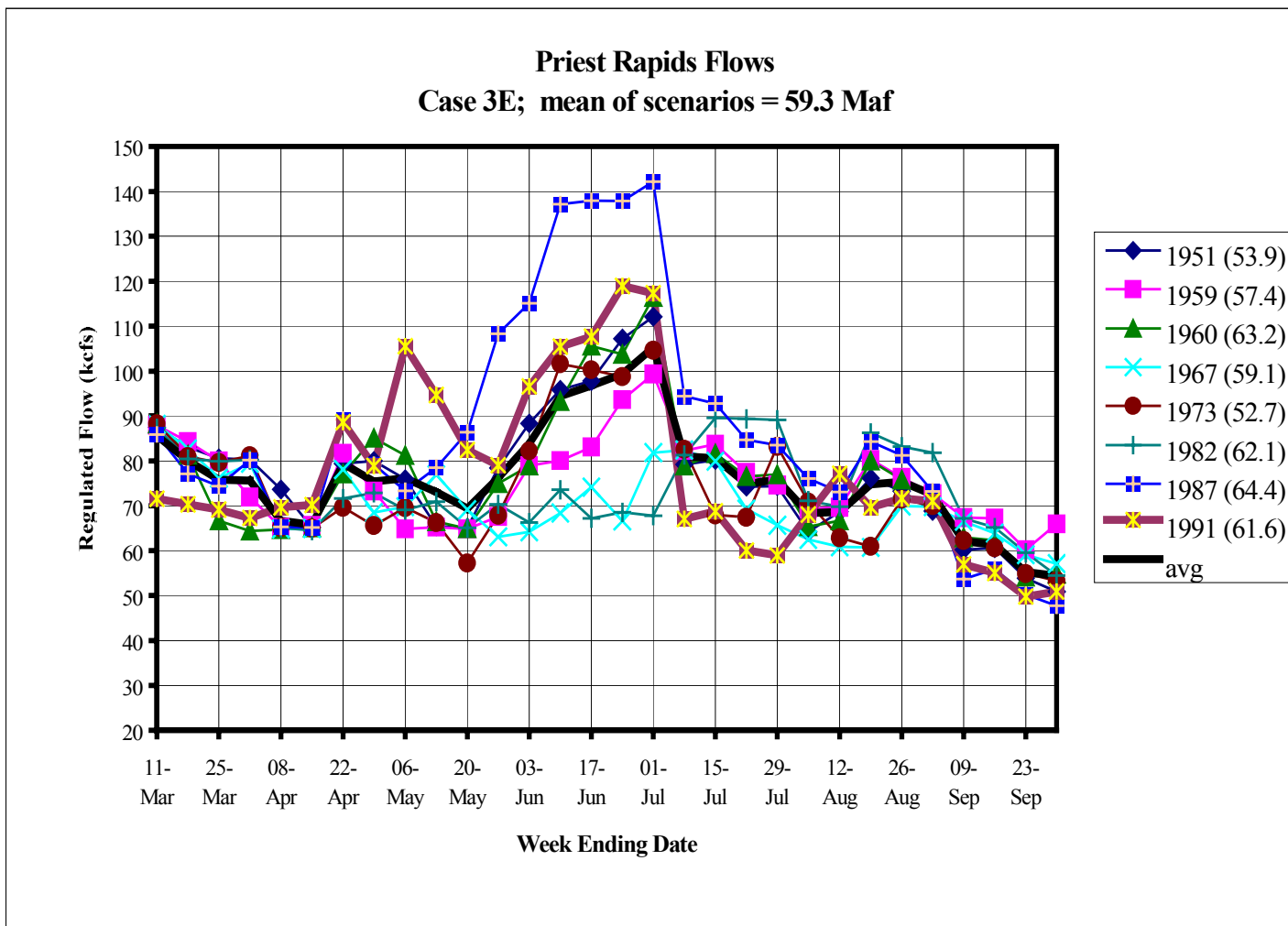
- If a greater than 53 MAF condition materializes, the Region has several choices about how to operate the system:
  - \* Draft storage reservoirs deeper to enhance summer flows
  - \* Spill to improve fish passage and survival
  - \* Generate energy and revenue to build cash reserves and avoid cash flow issues in Fiscal Years 2001 and 2002
  - \* Store water excess to that required to meet load; to enhance 2002 reliability, 2002 conditions for fish, and cash flow in Fiscal Year 2002
- 53 MAF is the threshold at which BPA cannot simultaneously maintain financial solvency, meet its firm load, maintain any spill for fish and keep reservoirs from drafting below summer limits.
- Even with a substantial rate increase on October 1, 2001, BPA has a cash flow problem in the first 6 months of the new rate period.

# Conclusion

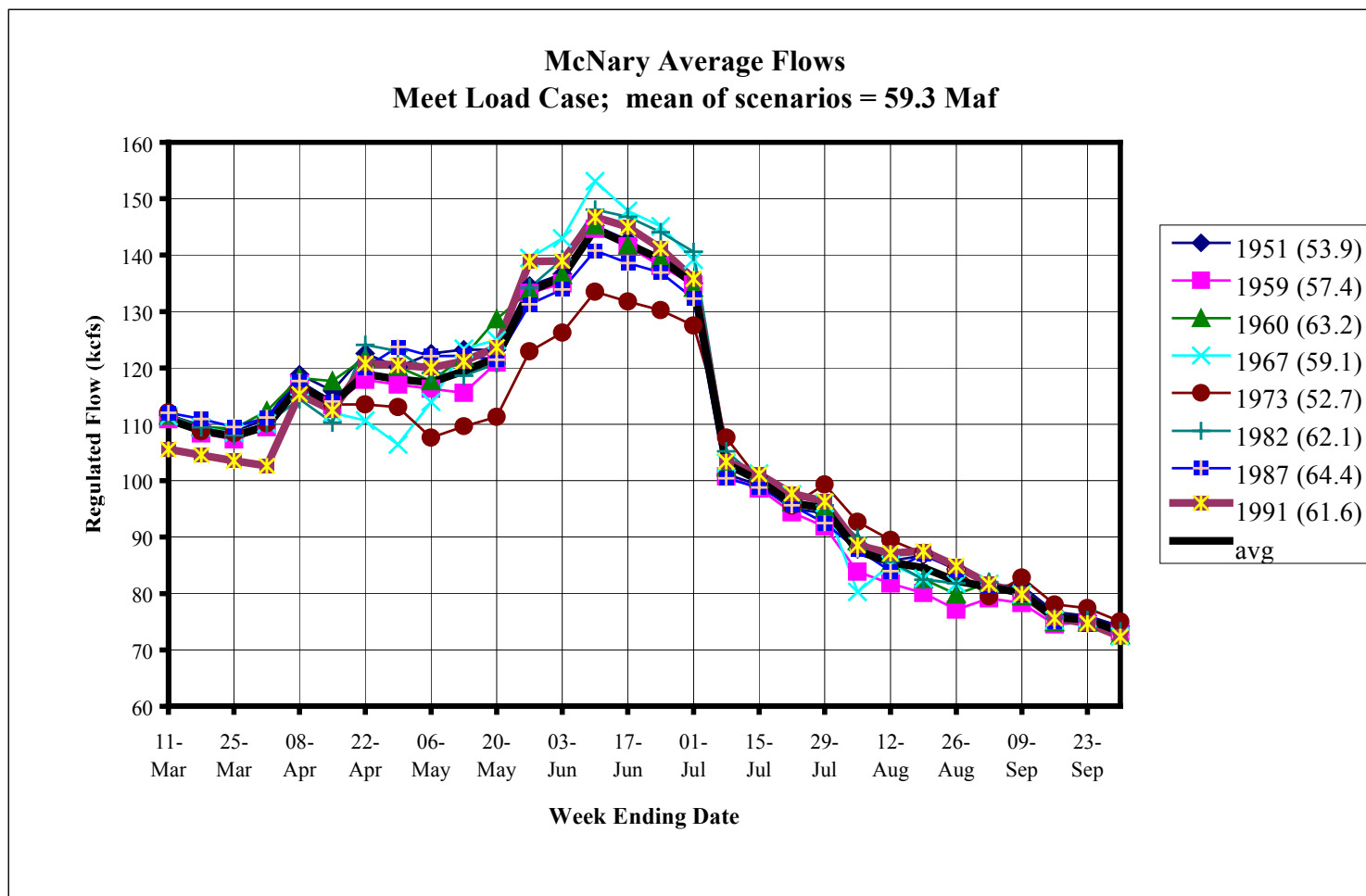
- Federal agencies have drafted “Proposed Principles for 2001 FCRPS Operations” and are soliciting feedback from regional parties through IT, TMT, and other forums.
- The draft principles currently out for review contain proposed operational priorities for 2001.
- The basic risk management objective in these principles is to avoid failure in the three risk areas of biological harm to fish, power system reliability, and BPA’s financial health.
- The operation under these principles will be dynamic and will change as conditions change.
- The Federal Executives recognize the importance of engaging the region on operating priorities and principles during this difficult condition and will endeavor to do so.

# Appendix

## Contingency Operation - Priest Rapids Flows



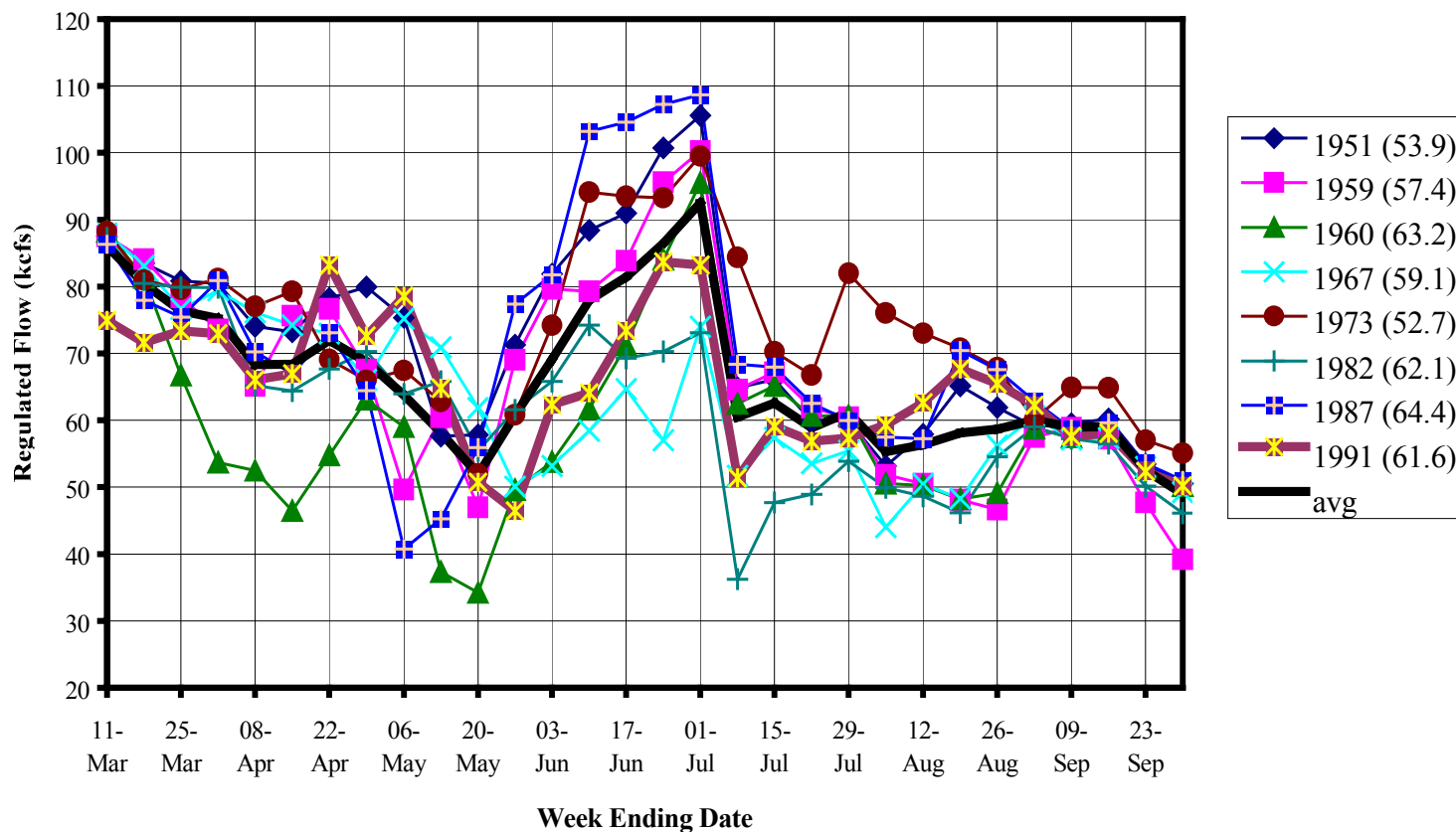
# Appendix



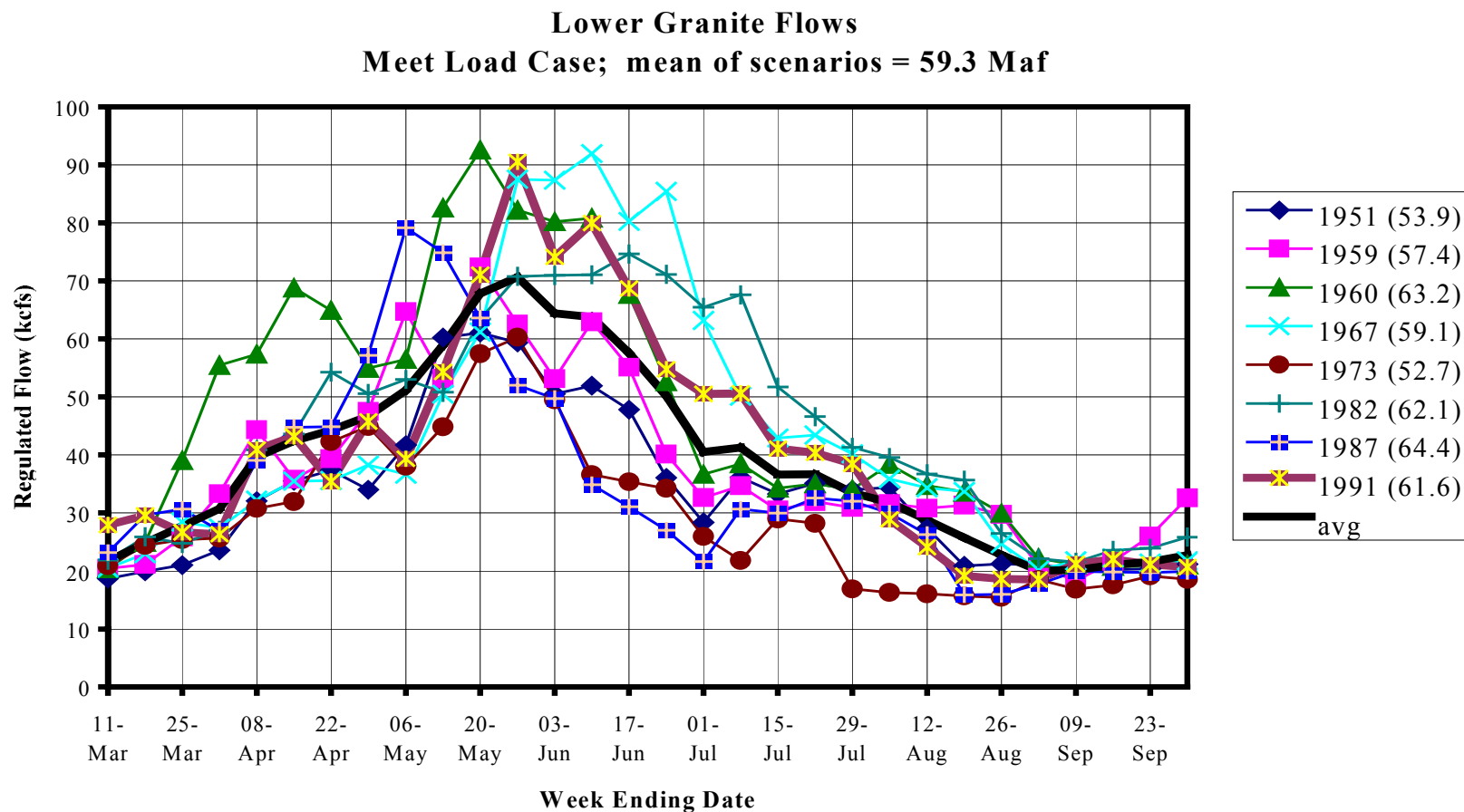


# Appendix

**Priest Rapids Flows**  
**Meet Load Case; mean of scenarios = 59.3 Maf**



# Appendix



# Appendix

			Proposed Contingency		BiOp Spill Levels	
Mn PH flow (kcf/s)	H/K	Project	Spring Spill (kcf/s) (unless % noted)	Summer Spill (kcf/s) (unless % noted)	Spring Spill (kcf/s) (unless % noted)	Summer Spill (kcf/s) (unless % noted)
30	4.0	Bonneville	75 day / 90 nite	50 for 24 hrs	75 day / 90 nite	75 day/90 nite
50	5.8	The Dalles	40% for 24 hrs	30% for 24 hrs	40% for 24 hrs	40% for 24 hrs
50	7.3	John Day	25% for 12 hrs	25% for 12 hrs	60% for 12 hrs	60% for 12 hrs
50	5.2	McNary	37.5 for 12 hrs	N/A	50 for 12 hrs	N/A
7.5-9.5	6.8	Ice Harbor	30 for 24 hrs	30 for 24 hrs	48.5 for 24 hrs	48.5 for 24 hrs
	7.0	Lower Monumental	N/A	N/A	N/A	N/A
	7.0	Little Goose	N/A	N/A	N/A	N/A
	7.0	Lower Granite	N/A	N/A	N/A	N/A